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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/738,543	12/17/2003	Torsten Gottschalk-Gaudig	WAS 0611 PUS / Wa 10239-S	8271
22045 7590 07/02/2008 BROOKS KUSHMAN P.C. 1000 TOWN CENTER TWENTY-SECOND FLOOR SOUTHFIELD, MI 48075			EXAMINER TSOY, ELENA	
			ART UNIT 1792	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/738,543	<b>Applicant(s)</b> GOTTSCHALK-GAUDIG ET AL.	
	<b>Examiner</b> Elena Tsoy	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-19,30 and 31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-19,30 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/21/2007 has been entered.

***Response to Amendment***

Amendment filed on May 2, 2008 has been entered. New claims 15-31 have been added. Claims 1-14 and 20-29 have been cancelled. Claims 15-19, 30 and 31 are pending in the application.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 17-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 17 recites  $R^1_3SiX_{y-n}$  which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Art Unit: 1792

3. Claims 17-19 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for  $R^1_nSiX_{4-n}$ , wherein n is 1, 2, 3 as in claim 15 does not reasonably provide enablement for  $R^1_3SiX_{y-n}$  because y is unknown. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

4. Claims 17-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 17 recites  $R^1_3SiX_{y-n}$  wherein y is unknown.

5. Claim 18 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 18 recites performing silylation additionally with organosiloxane of the formula (II) which was not described in the specification. The Applicants' specification describes performing silylation either with (I) or (II) not with both compounds.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1792

7. Claims 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites " $R^1_3SiX_{y-n}$ ", wherein y is unknown, and, thus, it renders the claim indefinite since it is practically impossible to understand what compound is used. For this reason **claims 17-19 have been withdrawn from consideration because the meaning of  $R^1_3SiX_{y-n}$  is unclear.**

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 15, 16, 30, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barthel et al (US 5686054).

Barthel et al teach a hydrophobic silica prepared by silylating a *pyrogenic* silica (See column 3, lines 59-64) having primary particle size of from 2 to 50 nm (See column 3, line 53) with a specific surface area of 150-250 m<sup>2</sup>/g (See column 3, lines 56-57), e.g. 200 m<sup>2</sup>/g (See column 11, lines 1-6) with a silylating agent of formula  $R^1_nSiX_{4-n}$  wherein n,  $R^1$  and X are identical to that of claimed invention (See column 4, lines 24+) such as **dimethyldichlorosilane** (See column 10, line 65) in an amount of **2-100** parts by weight per 100 parts of silica (See column 6, lines 41-45). Clearly, the degree of hydrophobicity of silylated silica would depend on the amount of silylating agent: silica treated with an amount of silane in lower part of the range

Art Unit: 1792

would be less hydrophobic than treated with an amount of silane in higher part of the range. Note that the Applicants use **2.86 g of dimethyldichlorosilane** (See Example 1 of specification).

Thus, the amount of dimethyldichlorosilane in Barthel et al overlaps the amount of 2.86 of the Applicants Example 1. It is well settled that **overlapping** ranges are *prima facie* evidence of obviousness. *In re Malagari*, 184 USPQ 549 (CCPA 1974). It would have been obvious to one having ordinary skill in the art to have selected the portion of Barthel et al's range that corresponds to the claimed range. In other words, if partly hydrophobic silica is desired, the silylating agent should be used with e.g. 2 parts per 100 parts of above described silica.

It is the Examiner's position that *pyrogenic* silica having 200 m<sup>2</sup>/g (See column 11, lines 1-6) treated with silane of claimed formula R<sup>1</sup><sub>n</sub>SiX<sub>4-n</sub> in an amount of the portion of Barthel et al's range that corresponds to the claimed range, per 100 parts of silica would have all claimed properties because the process of Barthel et al would be substantially identical to that of claimed invention (See Example 1 of the specification as originally filed). Namely, the treated silica would have a contact angle  $\theta$  in air for water of less than 180°, the degree of coverage  $\tau$  of the surface of the silica with silylating agent residues, based on the total silica particle surface area, being 1% <  $\tau$  < 50%, the density of the surface silanol groups SiOH ranging between a minimum of 0.9 and a maximum of 1.7 SiOH/nm<sup>2</sup> particle surface area, and the particles having a carbon content of less than 0.1% by weight and up to 0.5% by weight, and a methanol number of less than 20.

As to claim 16, limitations of claim 16 have not been addressed as further limiting *optional* non-selected organosiloxane of claim 15.

10. Claims 15, 16, 30, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo et al (US 5278204).

Tojo et al are applied here for the same reasons as set forth in paragraph 8 of the Office Action mailed on 3/15/2007. Tojo et al disclose silane-treated silica by treating dry method silica (See column 5, line 4) having a specific surface area of 100-300 m<sup>2</sup>/g (See column 5, lines 7-8), with a silane having structure of claimed formula I, e.g. allyltrimethoxysilane (See column 4, line 65) in such an amount as to achieve a carbon content of 0.1% -5% by weight based on treated silica (See column 5, lines 16-20). Note that allyltrimethoxysilane has 22.2 wt % of C. Therefore, a carbon content of 0.1% -5 wt % would be achieved by adding 0.45-22.5 g (0.027 mmol/g – 1.38 mmol/g) of the allyltrimethoxysilane per 100 g of silica, i.e. 0.027-1.38 mmol/g per 100-300 m<sup>2</sup>/g. Thus, per 100 m<sup>2</sup>/g of silica, the silane should be added in an amount from 0.027-1.38 mmol/g to 0.009-0.46 mmol/g so as to achieve a carbon content of 0.1% -5% by weight.

It is well settled that **overlapping** ranges are *prima facie* evidence of obviousness. *In re Malagari*, 184 USPQ 549 (CCPA 1974). Therefore, it would have been obvious to one having ordinary skill in the art to have selected the portion of Tojo et al's range that corresponds to the claimed range.

It is the Examiner's position that dry method silica having treated with silane of claimed formula R<sup>1</sup><sub>n</sub>SiX<sub>4-n</sub> in an amount of the portion of Tojo et al's range that corresponds to the claimed range, per 100 parts of silica would have all claimed properties because the process of Tojo et al would be substantially identical to that of claimed invention.

### ***Response to Arguments***

11. Applicants' arguments filed May 2, 2008 have been fully considered but they are not persuasive.

Art Unit: 1792

**Barthel et al**

Applicants argue that the prior claims had been rejected over Barthel, who requires that all his very hydrophobic silicas have methanol numbers greater than 50, and preferably much higher, regardless of how they are prepared. Applicants' claims require a maximum methanol number of 30. Barthel thus teaches away from the claimed invention.

The Examiner respectfully disagrees with this argument. Barthel uses a silylating agent of formula  $R^1_nSiX_{4-n}$  wherein  $n$ ,  $R^1$  and  $X$  are identical to that of claimed invention (See column 4, lines 24+) such as *dimethyldichlorosilane* (See column 10, line 65) in an amount of **2-100** parts by weight per 100 parts of silica (See column 6, lines 41-45). Clearly, the degree of hydrophobicity of silylated silica would depend on the amount of silylating agent: silica treated with an amount of silane in lower part of the range would be less hydrophobic than treated with an amount of silane in higher part of the range. In other words, methanol numbers may be greater than 50, or less than 30, if 2 parts of the silylating agent is used. Note that the Applicants use **2.86 g** of *dimethyldichlorosilane* (See Example 1 of specification). Thus, the amount of dimethyldichlorosilane in Barthel et al overlaps the amount of 2.86 of the Applicants' Example 1. It is well settled that *overlapping* ranges are prima facie evidence of obviousness. In re Malagari, 184 USPQ 549 (CCPA 1974). It would have been obvious to one having ordinary skill in the art to have selected the portion of Barthel et al's range that corresponds to the claimed range. In other words, if partly hydrophobic silica is desired, the silylating agent should be used in an amount of e.g. 2 parts per 100 parts of above described silica. Note also that the process of Barthel would be exactly as in Example 1 of the specification as originally filed, namely, treating silica having **200 m<sup>2</sup>/g** (not 100 m<sup>2</sup>/g as in comp. Example 2), with **2.86 g** of dimethyldichlorosilane (not 4.29 g or 9.9 g as in comp. Examples 2 and 3), per 100 g of silica such that silica was treated with 0.11 mmol/g of silane per 100 m<sup>2</sup>/g of silica whereas in the comparative example 2, Applicants used 0.22 mmol/g of silane per 100 m<sup>2</sup>/g of silica, and in the comparative example 3, Applicants used 0.29 mmol/g of silane per 100 m<sup>2</sup>/g of silica.

Thus, Barthel does not teach away from the claimed invention.

**Tojo et al**

Tojo is completely silent with regard to methanol number, and thus does not teach or suggest the claimed invention. With respect to claims 16 - 19, all of the silanes employed by



Art Unit: 1792

Tojo contain an alkenyl group, chloroalkyl group, or chloroalkenyl group on the silane, which is outside the scope of each of the claims 16 - 18.

The Examiner respectfully disagrees with this argument. Claim 16 recites *optional* non-selected organosiloxane. Claim 17 recites " $R^1_3SiX_{y-n}$ ", wherein y is unknown, and, thus, it is practically impossible to understand what compound is used.

Applicants argue that Tojo does not teach or suggest the claim requirements of the silica of claim 7. The residual silanol content is not disclosed, and neither is the methanol number.

The Examiner respectfully disagrees with this argument. Tojo discloses a process which is substantially identical to that of claim 1 except for overlapping range of an amount of a silane.

However, **overlapping** ranges are considered to be *prima facie* obvious.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Friday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/738,543

Page 9

Art Unit: 1792

Elena Tsoy, Ph.D.

Primary Examiner

Art Unit 1792

July 2, 2008

/Elena Tsoy /

Primary Examiner, Art Unit 1792